

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE

		127FM02		
FILTER, COOLANT LOOP, ITEM 127 ----- SV778543-3 (1)	2/2	Filter screen clogs.	END ITEM: Reduction in coolant makeup flow to the LCVG.	A. Design - (P/N SV778543): Pressure across the 20 micron screen is low normally (.15 psid). The filter is constructed from an Aisi 304L screen spot welded and bonded to an AISI 347 stainless steel housing. This stainless steel construction minimizes potential corrosion particles generation. The filter is designed to be removed and is replaced prior to every flight.
OR ----- SV805180-1 (1)		Excessive contamination in the coolant loop.	GFE INTERFACE: Unable to degas coolant circuit. Reduction in LCVG cooling capability.	(P/N SV805180): The radial flow filter design employs two cylindrical filter screens, each supported by a coarse mesh screen. These two filter designs provide a 1.3 square inch filter area resulting in an 80% increase over the SV778543 design. Pressure across the 20 micron filter screens is low normally (1.5 psid). The filters and support screens are constructed from an AISI 304L stainless steel screen welded to an AISI 347 stainless steel housing. This stainless steel construction minimizes potential corrosion particles generation.
			MISSION: Terminate EVA if cooling is insufficient.	B. Test - (P/N SV778543): Component Acceptance Test - During AT-E-127/128 filter must flow 11 lbs/hr H2O at 0.15 psid max. pressure drop.
			CREW/VEHICLE: None.	(P/N SV805180): Filter Element Acceptance Test - The pressure drop across the filter alone must be .05 psi max when flowing 11 lbs/hr of water at 65-80 F.
			TIME TO EFFECT /ACTIONS: Minutes.	PDA Test - None.
			TIME AVAILABLE: Minutes.	Certification Test - Certified for a useful life of 15 years or 328 hours. (ref. EMUM-583, EMUM-680).
			TIME REQUIRED: Seconds.	C. Inspection - (P/N SV778543 and P/N SV805180): A cleanliness level of HS3150 EM150B is maintained during assembly and testing of the filter. This cleanliness level requires a mandatory inspection for verification.
		REDUNDANCY SCREENS: A-N/A B-N/A C-N/A		D. Failure History - (P/N SV778543): J-EMU-100-014 (11-8-83) Inadequate sublimator cooling due to bubbles in coolant loop resulting from a clogged item 127 filter. Filter was clogged with aluminum oxide. Block II hardware do not have aluminum valve modules, thus reducing the amount of aluminum in the system. In addition the Item 127 filters are changed out prior to every flight.
				(P/N SV805180): None.
				E. Ground Turnaround - (P/N SV778543):

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The Item 127 is changed out prior to flight for non-EET processing per FEMU-R-001. Also, tested per FEMU-R-001, Dry LCVG Degas Test. None for EET processing.

(P/N SV805180):

The filter is changed out every 328 operating hours. Also, tested per FEMU-R-001, Dry LCVG Degas Test. None for EET processing.

F. Operational Use -

(P/N SV778543 and P/N SV805180):

Crew Response -

PreEVA: Trouble shoot problem. If no success, consider third EMU if available. Otherwise, continue with EVA pres.

EVA: If cooling becomes a problem, diminish level of activity and try to stay away from direct sunlight. If cooling is still inadequate, terminate EVA.

Training -

Standard training covers this failure mode.

Operational Considerations -

RTDS allows ground monitoring of EMU systems.

EVA check list procedures verify hardware integrity and systems operational status prior to EVA.

Flight rules define EMU as go to remain on SCU (available for rescue if required). Flight rules define loss of EMU for loss of thermal control.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-127 PUMP INLET FILTER
CRITICAL ITEM LIST (CIL)
EMU CONTRACT NO. NAS 9-97150

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